

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Hovey Lattewich *761*
July 1958

U. S. DEPARTMENT OF AGRICULTURE
Farmers' Bulletin No. 1263

Rev'd 1964

Revised 11/66

BREEDS OF SWINE



SWINE are of two distinct types, the lard type and the bacon type. The lard type far outnumbers the bacon type in the United States.

The lard type is preferred in this country; consequently the majority of feeders produce the rapid-fattening, heavily fleshed lard type.

The bacon type is raised extensively in those countries where the feed of the hog is more varied, where corn is not relied upon as the principal grain for hogs, and the production of choice bacon is more general.

The principal breeds of the lard type are the Duroc-Jersey, Poland China, Chester White, Berkshire, and Hampshire.

The principal breeds of the bacon type are the Tamworth and the Large Yorkshire.

No "best" breed of swine exists. Some breeds are superior to others in certain respects, and one breed may be better adapted than another to certain local conditions. This is a matter which the farmer will have to decide for himself. The type of animal within the breed is more important than the breed. The "big-type" hog, found in different breeds, meets with general favor.

Information concerning the various breeds of swine, their origin, general appearance, development, and adaptability, is given in the following pages.

Contribution from the Bureau of Animal Industry

JOHN R. MOHLER, Chief

Washington, D. C.

Issued June, 1922

BREEDS OF SWINE.¹

E. Z. RUSSELL, *Animal Husbandry Division.*

CONTENTS.

Page.		Page.	
Classification of swine	3	Minor breeds	19
Type more important than breed	3	Mule-foot	19
Breeds of the lard type	4	Kentucky Red Berkshire	20
Duroc-Jersey	5	Cheshire	20
Poland China	8	Essex	20
Chester White	9	Victoria	21
Berkshire	12	Large Black	22
Hampshire	12		
Spotted Poland China	15		
Breeds of the bacon type	16		
Tamworth	16		
Yorkshire	19		

CLASSIFICATION OF SWINE.

IN THE UNITED STATES there are two distinct classes of swine, represented by breeds of the lard type and breeds of the bacon type. Lard-type hogs are bred much more extensively than those of the bacon type by farmers throughout all parts of the United States. The principal lard-type breeds are the Duroc-Jersey, Poland China, Chester White, Berkshire, Hampshire, and Spotted Poland China. The only breeds of bacon-type hogs bred extensively are the Tamworth and the Yorkshire.

TYPE MORE IMPORTANT THAN BREED.

The selection of a breed is largely one of personal preference. There is no best breed of swine. There may be certain conditions on farms in the same locality under which one breed may do better than another. Generally the best breed to raise is the one which the breeder prefers.

The type of animal within the breed is of far greater importance than the breed itself. A large proportion of successful hog growers in the United States is using what is commonly called the "big-type" hog. These big-type animals are found in all breeds, but they are more numerous in some breeds than in others. Owing to an increasing demand for cured hams and bacon of high quality, the type of hog becomes a matter of considerable interest to the hog grower as well as to the buyer of market hogs. Hams weighing from 12 to 16 pounds and pieces of bacon weighing from 10 to 12 pounds are more

¹ This bulletin supersedes Farmers' Bulletin 765, same title.

likely to cure with high quality and flavor than lighter or heavier pieces. Neither hams nor bacon should carry excessive quantities of fat in proportion to the lean meat. Meats having the proper proportion of fat and lean are usually referred to as being "well marbled." The opportunity for producing meat of this character is greater in the quickly grown big-type hog than in the distinctly small-type. Hams of the above-mentioned weights from small-type animals usually have excessive quantities of fat.

Every hog raiser knows that the most profitable hog is the one which can be grown to the required market weight in the least possible time. The best market weight is generally from 175 to 225 pounds. At the present time there is a tendency on the part of some breeders of big-type hogs to raise a class of animals in which the matter of large type has been carried to an extreme; for instance, those whose carcasses at market weights are flabby. The hog that commands the best market price is the one which will "kill out" with a good, firm carcass. The most profitable type of hog to grow is the one which produces the heaviest high-class hams and bacon and only lard enough to supply market demands. Well-bred and well-fed animals of this type attain market weights at from 7 to 10 months of age. If the small-type hog is pushed to market weights he will not only produce hams and bacon having too large a proportion of fat but will generally have to be fed for a longer period to attain it.

Prolificacy in the breeding herd must receive attention by the hog grower. Exercise is essential for the production of prolific breeding animals. A big-type animal exercises much more freely than one of the small type; consequently the big-type sow produces a larger and stronger litter of pigs.

Building up and maintaining a herd of big-type breeding animals can be done only when careful selection is practiced. The continuous use of immature males and females as the major portion of a breeding herd has a tendency to reduce the size of the offspring. It is necessary therefore for best results to select carefully big-type animals, to provide proper feed and management for quick growth, and to use breeding animals of sufficient maturity to maintain the type in the herd. Big-type hogs can be profitably made heavier than the usual market requirements if feeding conditions or market demands make this advisable.

BREEDS OF THE LARD TYPE.

Within the last decade the lard-type hog has been changed to a considerable extent in its general appearance. Formerly it was a rather low-set, broad, blocky type of hog. To-day the general run of lard-type hogs is fairly upstanding, having good length and depth, with medium width. The shoulders should be full and smooth, not

coarse; the hams full and as wide as the shoulders, carried back well to the root of the tail, and fleshed down to the hock. The flesh should be evenly distributed over the body. As a class, lard-type hogs do not have the quality and density of bone that prevail in the bacon breeds.

Among the principal lard-type breeds to be found in the United States are the Duroc-Jersey, Poland China, Chester White, Berkshire, Hampshire, and Spotted Poland China.

DUROC-JERSEY.

The Duroc-Jersey breed originated in the northeastern section of the United States. It was derived from mating strains of red hogs developed in sections of New York and New Jersey. Those in New Jersey were originally called Jersey Reds; those in New York are said to have been developed by a man who owned the noted stallion "Duroc," and people in that vicinity called the red hogs which this man was breeding "Duroc" hogs. Some years after the independent breeding of Durocs and Jersey Reds, these hogs were intermingled in breeding, with the result that there was formed the breed known at the present time as Duroc-Jersey. This breed is red in color, without admixture of any other colors. The popular color is referred to as cherry red; some animals, however, are quite dark, while others are quite light. There is no recognizable difference in the feeding or other qualities among hogs of the different shades of color in this breed.

From its early history the Duroc-Jersey breed was noted for hardness and prolificacy. It began to be quite popular in the United States at about the time Poland-China breeders were producing the small type of hogs or so-called "hot bloods." This popularity had much to do with making the Duroc-Jersey breed as widespread as it is to-day. Animals of this breed had sufficient quality and hardness to make them profitable to hog growers. In type they are similar to big-type Poland Chinas. The boars when in show condition do not as a rule acquire quite so much weight as those of the Poland-China breed. The legs are of medium length, with good bone. The sows are very prolific and are good milkers and mothers. Duroc-Jerseys are good grazers and are profitably adapted to following cattle in the feed lots.

Pigs of this breed of good type attain a weight of 200 pounds at six months of age and are capable of producing a greater weight at a profit if market conditions justify their being fed for a longer time. The feet and bones of Duroc-Jersey hogs generally have good quality. Boars of the breed are massive and have good length and depth with good backs. In show condition they may attain a weight

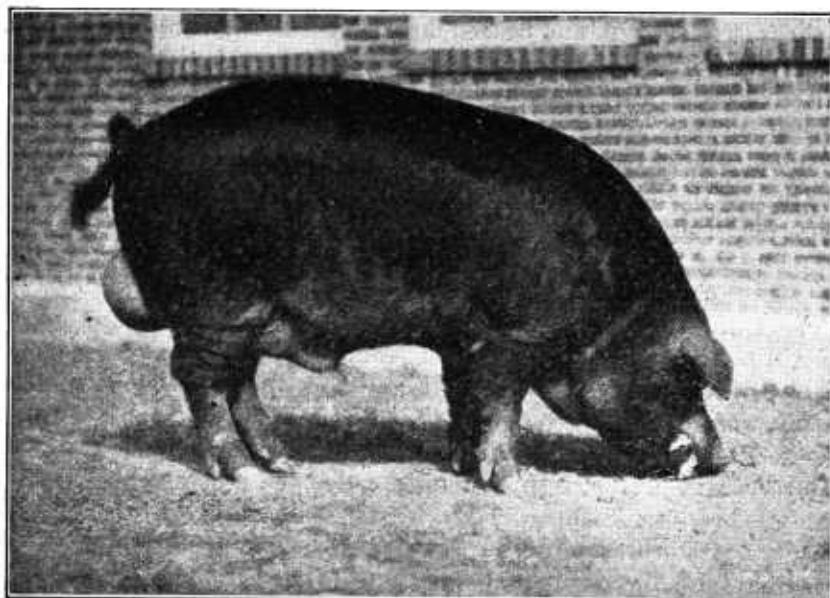


FIG. 1.—Duroc-Jersey boar.

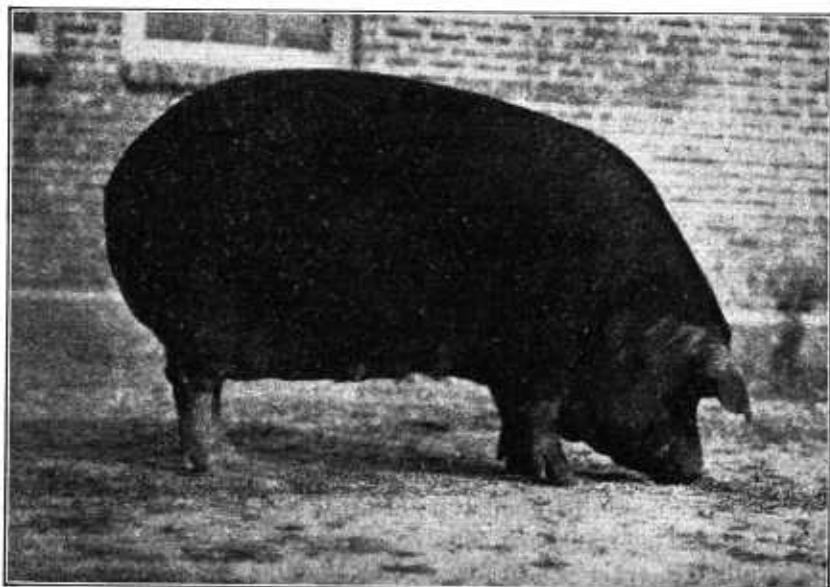


FIG. 2.—Duroc-Jersey sow.

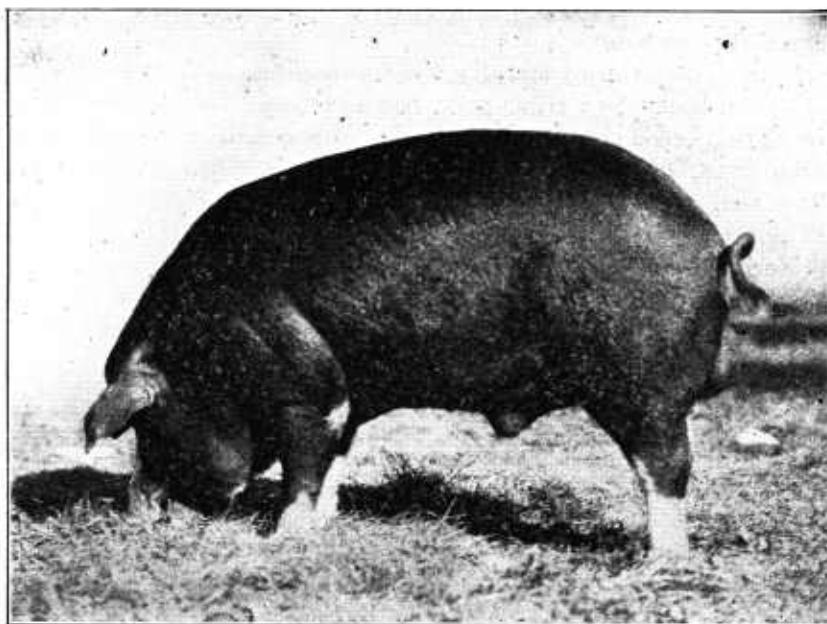


FIG. 3.—Poland-China boar.

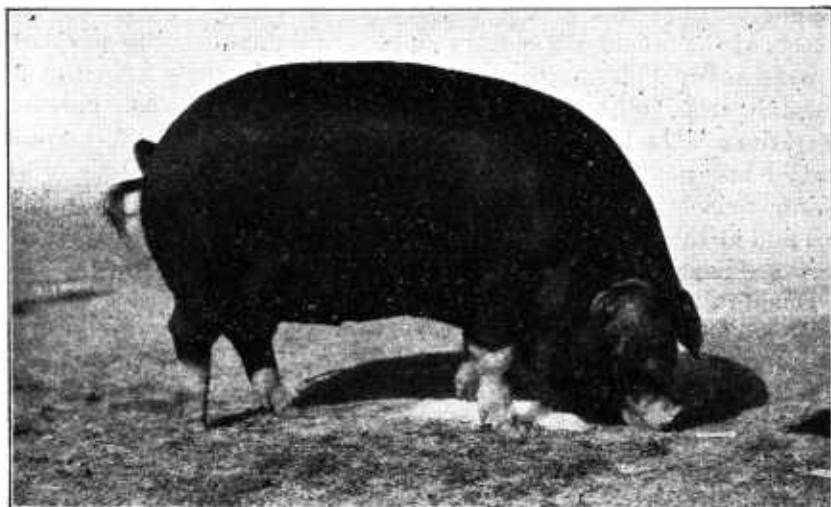


FIG. 4.—Poland-China sow.

of 1,000 pounds. In breeding condition aged boars generally weigh from 650 pounds up.

Duroc-Jersey sows generally are upstanding, having good depth with good backs, as well as good feet and legs. One seldom finds a sow of this breed cross or fretful. In show condition sows generally weigh from 600 to 700 pounds. In some instances a greater weight is reached.

There are two associations for recording hogs of this breed, viz, the National Duroc-Jersey Record Association, the secretary of which is J. R. Pfander, Peoria, Ill., and the American Duroc-Jersey Breeders' Association, of which R. J. Evans, Union Stock Yards, Chicago, Ill., is secretary.

POLAND CHINA.

The Poland-China hog originated in Butler and Warren Counties, Ohio. This breed undoubtedly was derived from the crossing of several breeds. In the seventies two farmers—A. C. Moore, of Canton, Ohio, and D. M. Magie, of Oxford, Ohio—developed a widespread reputation for their hogs and advertised them quite extensively. Their hogs were known at that time, respectively, as the Moore hogs and the Magie hogs. From the Moore and Magie hogs was developed the breed now known as the Poland China.

The early Poland-China hog was a large, rugged, coarse-eared, heavy-boned, prolific, spotted animal that attained a good market weight but was not of the easiest feeding type. During the last decade of the nineteenth century and the first decade of the twentieth century many Poland-China breeders, especially those breeding for the show ring, followed what may be termed a fad in their breeding operations. The fashionable type was a short-legged, small, compact-bodied hog popularly known as the "hot blood." It had six white points, namely, four white feet and a white splash on the end of the tail and at the point of the nose. The sows were neither prolific nor very good sucklers.

During the last 15 years the type of the Poland-China hog has been changed materially. On only very few farms can one find any of the old "hot-blood" Poland Chinas. On a large number of farms, however, Poland Chinas of what may be termed the medium type are still produced. A large proportion of growers of Poland Chinas now keep the big type. This is the type that has become by far the most popular because of its great utility. The boars have big, heavy bone, are rugged, possess plenty of length and depth, and with it all have good quality. Mature boars of this type in show condition weigh from 850 to 1,000 pounds. Some animals have shown greater weights. In breeding condition aged boars should weigh from 650

pounds up and sows from 500 pounds up. The sows are prolific, good sucklers, and are capable of raising good-sized litters. They have plenty of length, are smooth, with good, full shoulders and well-rounded hams. They are naturally active, take plenty of exercise, and are capable of producing strong litters at farrowing time. The color of the present-day Poland China generally is black. Many of them have white spots on different parts of the body.

The Poland China is not surpassed by any breed in producing a finished carcass at an early age. The meat finds ready sale on the market. Pigs of this breed may be made to weigh 200 pounds at 6 months of age.

There are three associations in the United States that register pure-bred Poland China hogs, namely, the American Poland China Record Association, W. M. McFadden, secretary, 609 Transportation Building, Chicago, Ill.; the Standard Poland China Record Association, F. L. Garrett, secretary, Maryville, Mo.; and the National Poland China Record Association, A. M. Brown, secretary, Moorman Block, Winchester, Ind.

CHESTER WHITE.

The Chester White breed had its origin in Chester County, Pa. The large, coarse hogs found in the Eastern States, especially in Pennsylvania, early in the nineteenth century were a mixture of the Yorkshire, Lincolnshire, and Cheshire hogs, all of which were of English origin. In Pennsylvania these hogs were crossed on smaller-type hogs, but the most successful cross was by using an imported hog from Bedfordshire, England. This crossing was continuously improved up to 1848, when the breed reached such a degree of purity that it could be relied upon to reproduce its desirable qualities. It was named "Chester County White" in 1848, but the word "County" was soon dropped and the present name became established.

The first record association for the breed was created in 1884, and to its record all individuals of the breed trace. Later there were eight different record associations catering to the business of the breed, and as these lessened the unity of action among the breed's advocates, the popularity that the breed had acquired during the latter half of the nineteenth century seemed to wane.

The Chester White is a very prolific breed. It has a good disposition and easily adapts itself to its environment. It matures early, and, being a good grazer, a good feeder, and possessing good dressing qualities, has demonstrated its utility on many farms in the United States. From 1884 the uniformity of size for age of the Chester White has been commendable. The score-card type or the standard

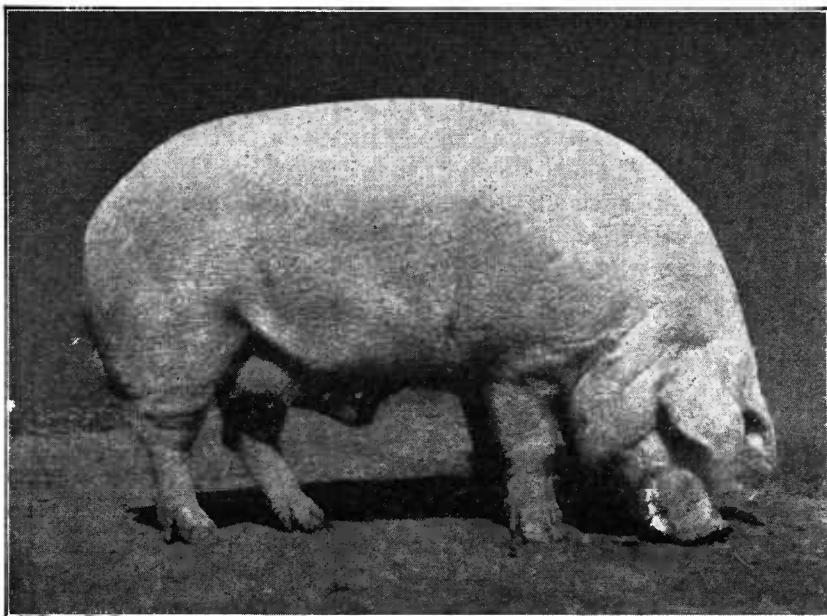


FIG. 5.—Chester-White boar.

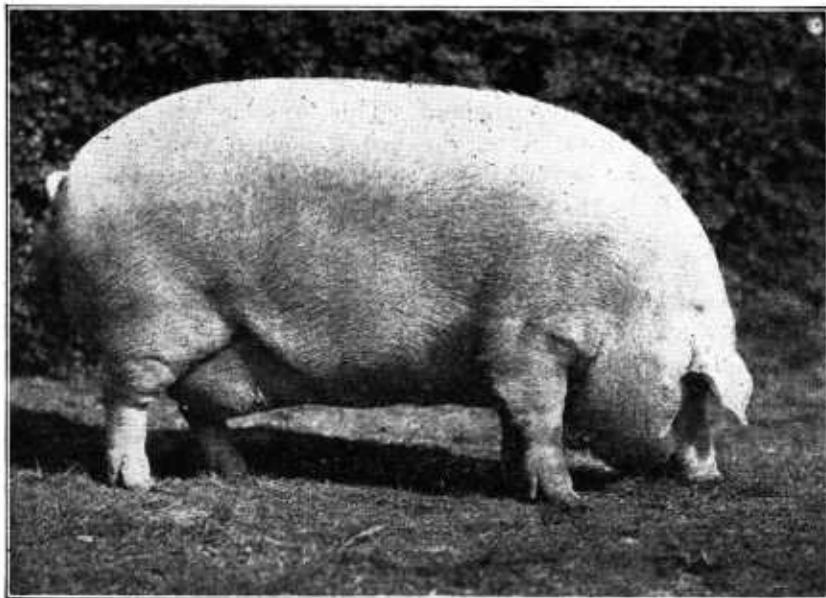


FIG. 6.—Chester-White sow.

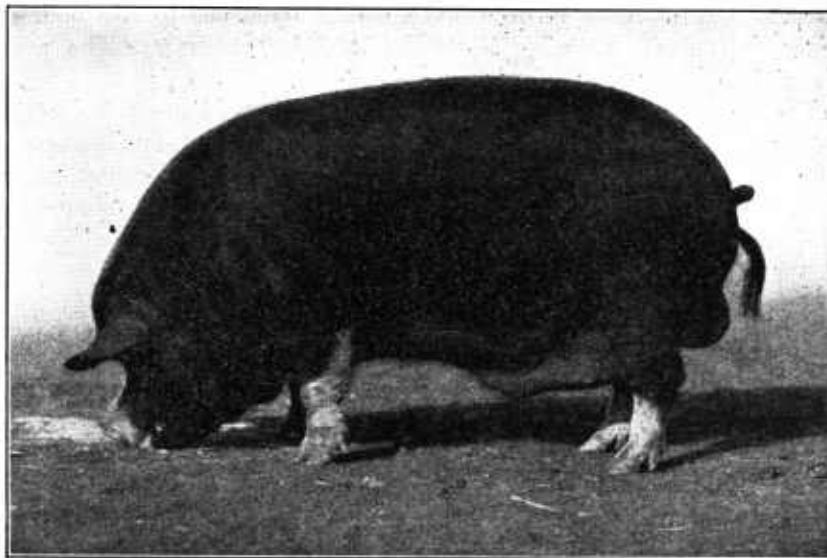


FIG. 7.—Berkshire boar.

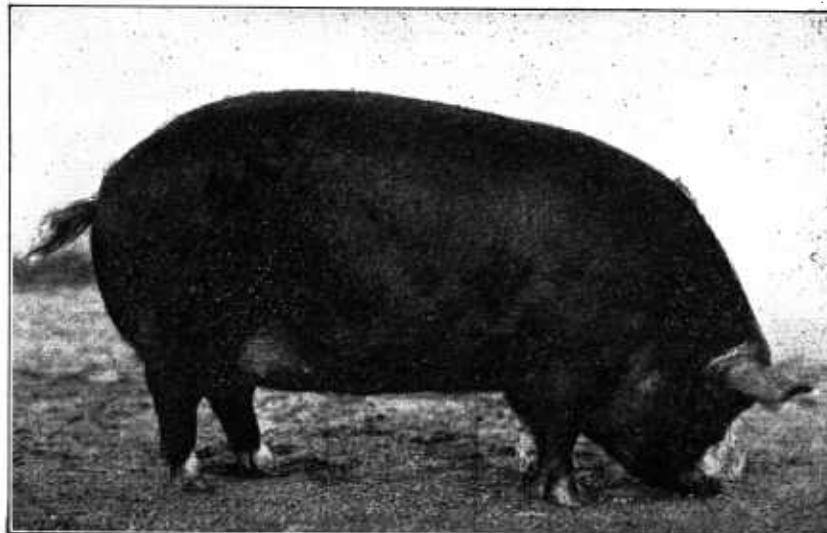


FIG. 8.—Berkshire sow.

of excellence is very similar to the type of the other lard breeds of swine. Mature boars of this breed weigh from 600 to 850 pounds, some individuals showing a weight of 1,000 pounds. The sows weigh from 500 to 700 pounds.

The recognized record associations for the breed are the Chester White Swine Record Association, F. F. Moore, secretary, Rochester, Ind.; the O. I. C. Swine Breeders' Association, O. C. Vernon, secretary, Goshen, Ind.; and the National Chester White Swine Record, Thomas Sharpless, secretary, West Chester, Pa.

BERKSHIRE.

The Berkshire is one of the oldest of the improved breeds of swine. It was originated and developed in England and is still raised quite extensively in that country. Many animals of this breed have been imported into the United States and Canada from English herds. Mention is made of the Berkshire hogs in England and Scotland as early as 1789, large specimens being compared with those of other breeds, one animal said to weigh 1,130 pounds and another being still larger.

Berkshire hogs are found in noted herds in the United States. They are of medium size, generally smooth, and of good length and depth, having legs of medium length with fair size and fair quality of bone. In color this breed is similar to the Poland China, but has not so many white spots as are usually found on the Polands. Some breeders object seriously to too many white spots. The peculiarity of the Berkshire breed is the short, upturned nose. The face is usually dished and the ears are erect but inclined slightly forward. Berkshire hogs have good width of body, the back broad and the ribs well sprung. The hams and shoulders are generally smooth and well fleshed. The meat of the Berkshire is good in quality.

Good Berkshire pigs can be fed to market weight at from six months of age up. Mature boars of this breed in good show condition usually weigh from 600 to 850 pounds. Some attain a heavier weight. Mature sows should weigh from 450 to 650 pounds.

The record association for this breed is the American Berkshire Association, of which Frank S. Springer, 510 East Monroe Street, Springfield, Ill., is secretary.

HAMPSHIRE.

The Hampshire breed originated in the English county of the same name and was introduced into the United States during the first half of the last century. When the Hampshire hog first began to be popular in the United States it was often referred to as the Thin Rind hog and was classed as a bacon breed. It is now recognized as one

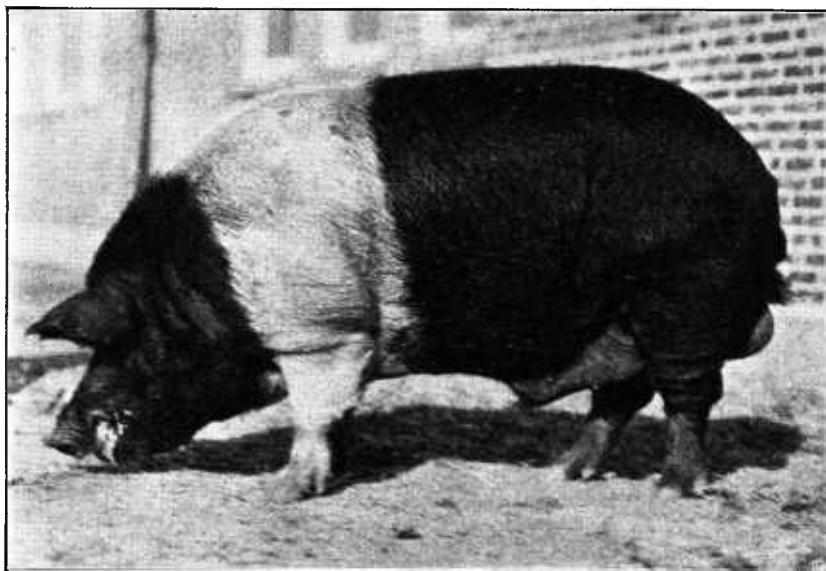


FIG. 9.—Hampshire boar.

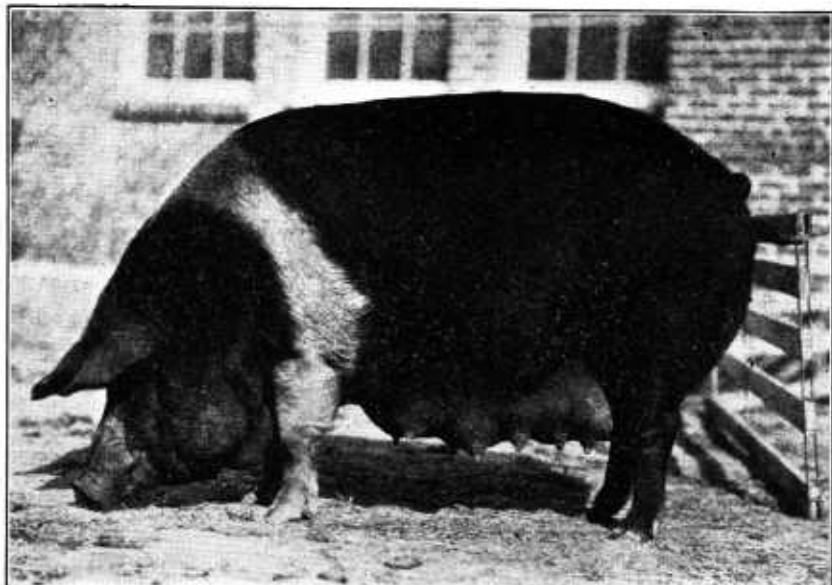


FIG. 10.—Hampshire sow.

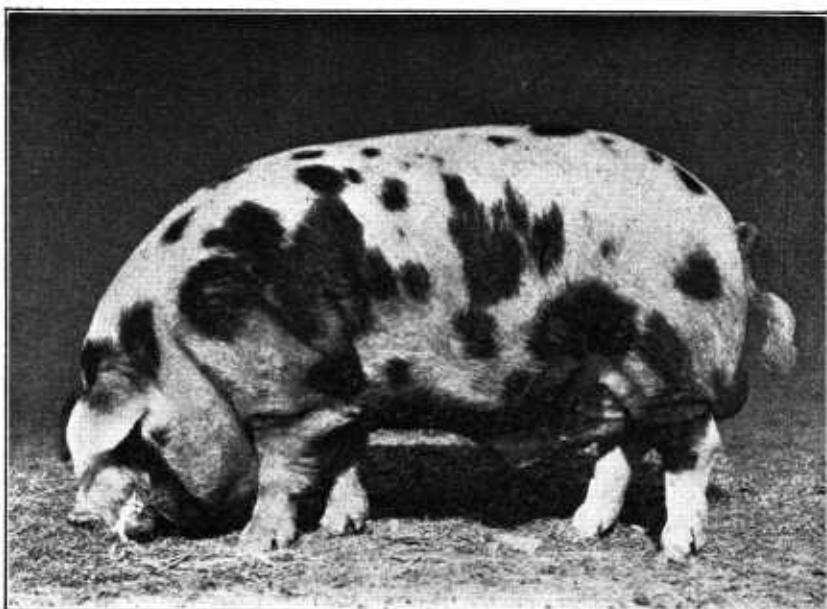


FIG. 11.—Spotted Poland-China boar.

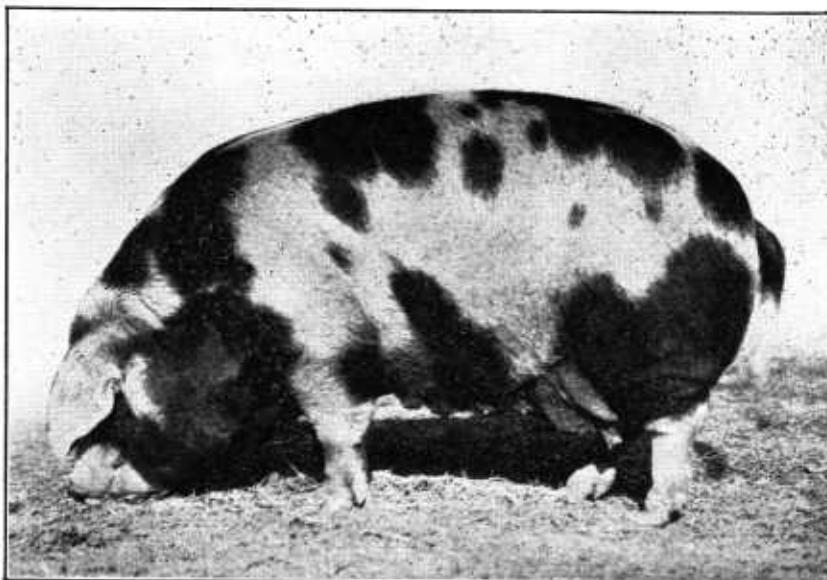


FIG. 12.—Spotted Poland-China sow.

of the lard breeds. Hampshires have made rapid progress in popularity during the last 10 or 15 years. Sows of the breed are prolific. The mothers are good sucklers and make good use of grass in pastures.

The most striking characteristic of the Hampshire is the white belt around its body, including the shoulders and front legs. The standard of perfection for Hampshires looks with disfavor upon white showing high on the hind legs and on belts greater than one-fourth the body length. Hampshire breeders sometimes discard excellent animals in their breeding operations because of imperfect belts or because they have white hind feet or legs.

The Hampshire in general appearance is smooth, has legs that are rather fine boned and of fairly good quality. Hampshire breeders are making efforts to increase the size and quality of the bone. The body of a Hampshire hog is not so broad as that of a hog of the other large breeds, but it is deep and smooth, and produces desirable sides for bacon. The jowls are light, the head is small and narrow, the snout rather straight and of medium length, the ears erect, the shoulders smooth and well set, and the hams deep but not so thick as in the other lard breeds. The flesh is of good quality. Animals of this breed sell readily on the open market.

The Hampshire possesses good growing and fattening qualities, and pigs may be brought to marketable weights at from six months old up. In show condition mature boars of the breed weigh from 600 to 850 pounds, some attaining a greater weight. Mature sows in show condition weigh from 500 to 700 pounds.

The only record association for this breed is the Hampshire Record Association, the secretary of which is E. C. Stone, 409 Wisconsin Avenue, Peoria, Ill.

SPOTTED POLAND CHINA.

The Spotted Poland China in many ways is very much like the Poland China, but there is much more white on the body of the former. The appearance is rather that of a white hog with numerous black spots. The standard requirement of the present record association for the breed is that at least 50 per cent of the body be white. These hogs began to be noticed more during the time when there was a tendency throughout the country to get away from the "hot-blood" Poland Chinas. The Spotted Poland-China hog, having more length and greater size than the "hot bloods," attracted the attention of farmers who were looking for larger hogs. The first record association of this breed, known as the National Spotted Poland China Record Association, was organized January 1, 1914.

The general type found in this breed is a hog with good length, fairly straight, broad back, good depth of body, legs of medium

length with heavy bone of medium quality. The head is short and broad, and the ears are somewhat larger than those of the Poland-China breed. Some Gloucester Old Spots, imported from England into the United States as foundation animals in some herds, and recorded in the Spotted Poland China Record, have influenced the type in this breed to a considerable extent. Boars in show condition weigh from 650 to 1,000 pounds, sows from 550 to 700 pounds. The sows are prolific and raise good-sized litters.

The present record association for this breed is the Spotted Poland China Record Association, of which Fred L. Obenchain, 602 Wulsin Building, Indianapolis, Ind., is secretary.

BREEDS OF THE BACON TYPE.

Hog growers in the United States do not raise the bacon-type hog to any great extent. The Tamworth and the Yorkshire, of English origin, are the two breeds grown in the United States which represent this type. The Tamworth breed is established in many localities. The Yorkshire is confined principally to the States in the North.

Bacon hogs are different from lard-type hogs in that they have extreme length, the object of breeders being to produce the maximum amount of bacon with relatively small hams and shoulders. Animals of this type have good depth, deep sides, and are comparatively narrow, with generally smoother bodies than most of the hogs of the lard breeds.

TAMWORTH.

The Tamworth is one of the oldest and probably one of the purest of all breeds of hogs. There is no evidence of its having been crossed with other modern breeds. On the other hand, there is evidence of pure breeding dating back more than 100 years. The name of the breed is derived from the town of Tamworth, located on the River Tame, in Staffordshire, near the north border of Warwickshire, England. Sir Robert Peel is credited with having introduced these hogs into England from Ireland about 1812, though their real origin is obscure. The first record of any of this breed having been brought to America appears to have been in 1881.

Hogs of the Tamworth breed are rather long-legged, with long, deep, smooth bodies, good backs, narrow heads, rather long snouts, and fairly large ears, usually erect and often inclined forward. The jowls are light and the bone is medium in size, but generally of very good quality. The color is red, varying from light to dark. These hogs are good grazers and take on flesh readily. Pigs of 200 pounds weight at 6 months of age are not uncommon. They do not mature quite so early as some of the other breeds. At the same time they attain a market weight at as early an age as any of the lard-type

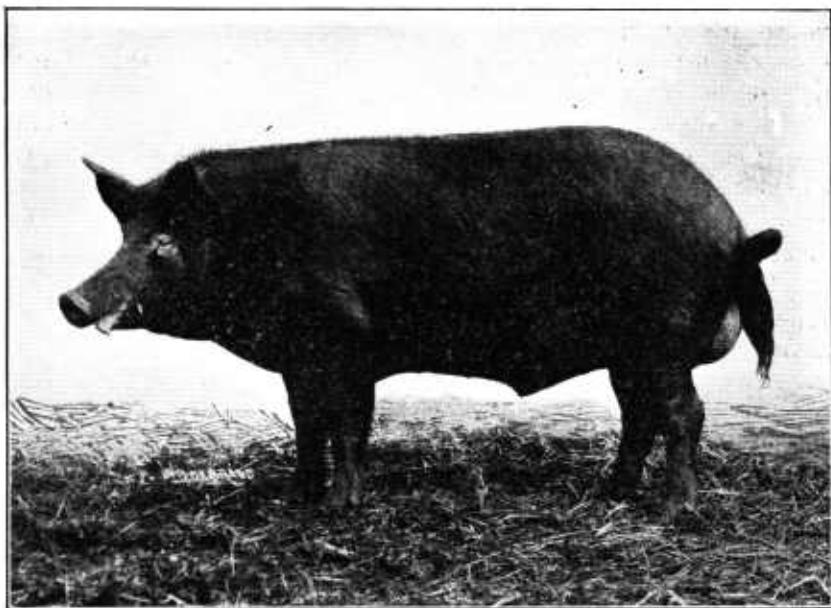


FIG. 13.—Tamworth boar.

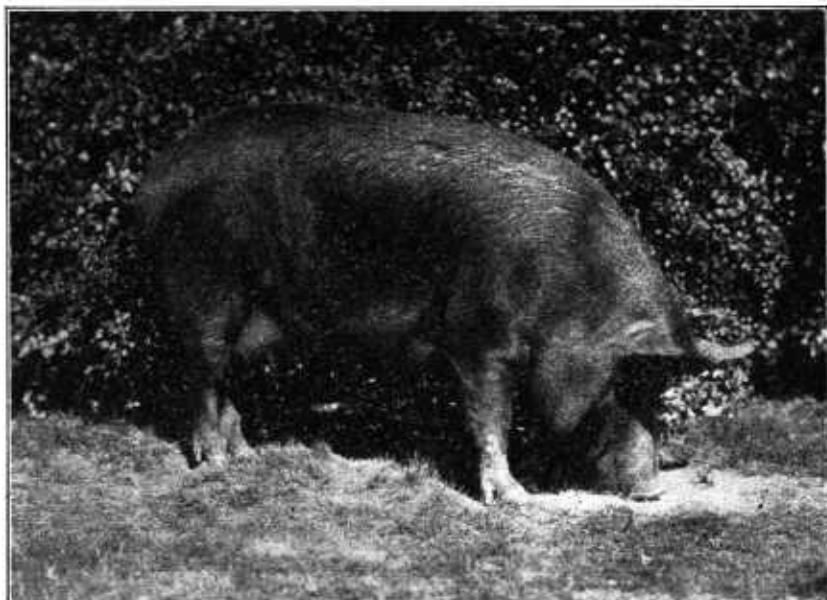


FIG. 14.—Tamworth sow.

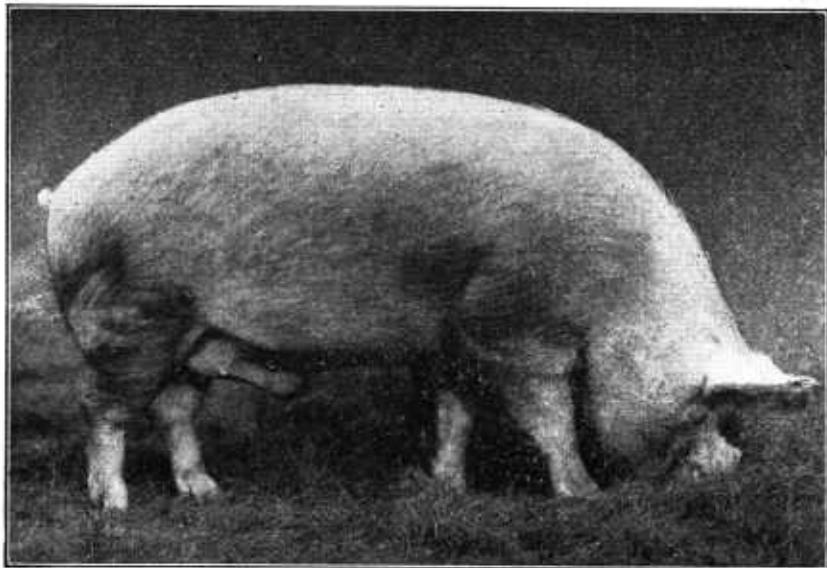


FIG. 15.—Yorkshire boar.

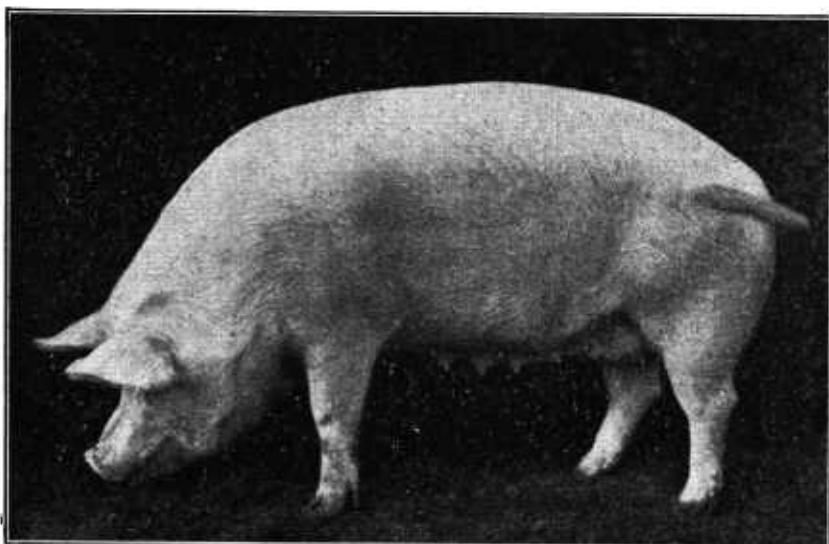


FIG. 16.—Yorkshire sow.

breeds and can be fed profitably to greater weights. Mature boars weigh from 700 to 1,000 pounds. Mature sows weigh from 550 to 800 pounds. The sows are very prolific and generally good sucklers.

The American Tamworth Swine Record Association was organized in 1897. The secretary is F. M. Hartzell, Carthage, Ill.

YORKSHIRE.

There are three distinct types of the Yorkshire breed, known as Large, Middle, and Small Yorkshires. All originated in England, where the Middle and Small Yorkshires are known as Middle and Small Whites. The Large Yorkshire greatly outnumbers the others, and is the type raised by practically all Yorkshire breeders in the United States.

They are large, white hogs with smooth, even, deep bodies, very long, capable of dressing out a large percentage of meat with bacon of very good quality. The body is supported by legs of good length, having bone of medium size and generally of very good quality. Occasionally there are black pigment spots in the skin of animals of this breed. This does not disqualify them, yet it is objectionable from the standpoint of breeders of purebred stock. Large Yorkshire sows are prolific and are generally very good sucklers. Mature boars of this breed weigh from 700 to 1,000 pounds. Mature sows should weigh from 500 to 800 pounds.

The American Yorkshire Club records both the Large and Small Yorkshires. The secretary is Harry G. Krum, 471 Fairview Inn, St. Paul, Minn.

MINOR BREEDS.

The greater part of the swine industry of the United States is represented by the eight breeds previously discussed; still there are scattered in several parts of the country other breeds in small numbers. Among the minor breeds are the Mule-foot, the Kentucky Red Berkshire, the Cheshire, the Essex, the Victoria, and the Large Black. None of these breeds are raised to any very great extent in the United States.

MULE-FOOT.

Mule-foot hogs are a very ancient breed, probably being natives of Africa. A little less than two centuries ago Linnaeus, the famous Swedish naturalist, classified Mule-foot hogs as a distinct breed. Darwin in 1859 described them, and mentioned that they were to be found in Scotland. This breed became established in America in 1908 through the formation of the National Mule-foot Hog Association. It is not the offshoot from any other breed and has not been

produced by crossing with any other species. The name Mule-foot is derived from the shape of the feet, the hoof not being split.

The claim has been made that Mule-foot hogs are immune to hog cholera. This claim is entirely unjustified, they being as susceptible when exposed to hog cholera as any of the other breeds.

The color of this breed is black. White points are admissible. The animals are of medium size. Mature boars should weigh from 450 to 550 pounds, though in some instances a greater weight is attained. The Mule-foot hog is classed as a lard breed.

There are two record associations for this breed, the National Mule-foot Hog Record Association, G. C. Kreglow, secretary, De-graff, Ohio; and the American Mule-foot Hog Record Co., R. E. Pfeiffer, secretary, 1105 Wyandotte Building, Columbus, Ohio.

KENTUCKY RED BERKSHIRE.

The Kentucky Red Berkshire is a hog having very much the same conformation as the common Berkshire, but red in color. Breeders assert that these hogs have been bred pure for more than 75 years. They are raised in very limited numbers, mostly in Kentucky. They belong to the lard type.

The Kentucky Red Berkshire Swine Record Association, organized in September, 1913, is the official record association, of which W. B. Turley, Richmond, Ky., is secretary.

CHESTIRE.

The Cheshire breed of hogs originated in Jefferson County, N. Y., in the north-central part of the State, on the eastern shore of Lake Ontario. Its origin dates back to about 1855, and resulted from crossbreeding the Yorkshire and the White Suffolk hogs of England. It was officially named Cheshire in 1872 by the swine breeders' convention at Indianapolis, Ind. The color is white; the head is of medium length; the face slightly dished; the ears small and erect; and the body of medium width and depth. The quality of the meat is good. The type might be classed as medium, being neither distinctively the lard nor the bacon type.

The Cheshire Swine Breeders' Association was organized in 1884 in New York State. E. S. Hill, Freeville, N. Y., is secretary.

ESSEX.

The Essex breed was developed in Essex County, England. It is thought to have resulted from crossing hogs of the Black Suffolk and Berkshire breeds. The Essex hog is entirely black and is a distinctly small-type breed. The head is short and the ears are small.

fine, and carried erect. The legs are short and the bone fine. The meat has good quality and flavor, but is excessively fat. The Essex is classed as a lard-type hog. This breed has not become popular in the United States, probably because of its size. Some 30 or 40 years ago Essex hogs were used in crossbreeding by farmers having large, coarse hogs of other breeds. The idea of such crossing was to produce a quick-maturing animal. The first Essex hogs were brought into Massachusetts about 1820.

The American Essex Association was formed in 1887. F. M. Sprout, New London, Iowa, is secretary.

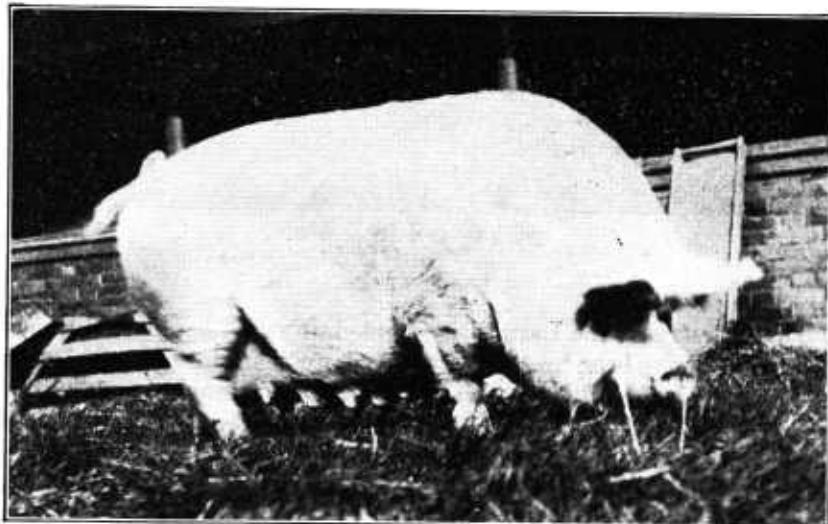


FIG. 17.—Victoria sow.

VICTORIA.

The true origin of the Victoria breed is not definitely known. One possible origin may be from a combination of the blood of Poland China, Berkshire, Suffolk, and Chester White. These were crossbred, and the breed may have resulted from careful selections of animals thus obtained. About 1850 in Saratoga County, N. Y., the native hog containing bloodlines of the Irish Grazier was crossed with the Yorkshire. Probably some animals of the Suffolk breed were also used to produce the hog later known as the Victoria. The Victoria would be classed among the lard-type hogs. In size, Victoria hogs are medium. Mature animals range in weight from 400 to 600 pounds.

The Victoria Swine Breeders' Association was organized in Indiana in 1886. The secretary is H. Davis, Dyer, Ind.

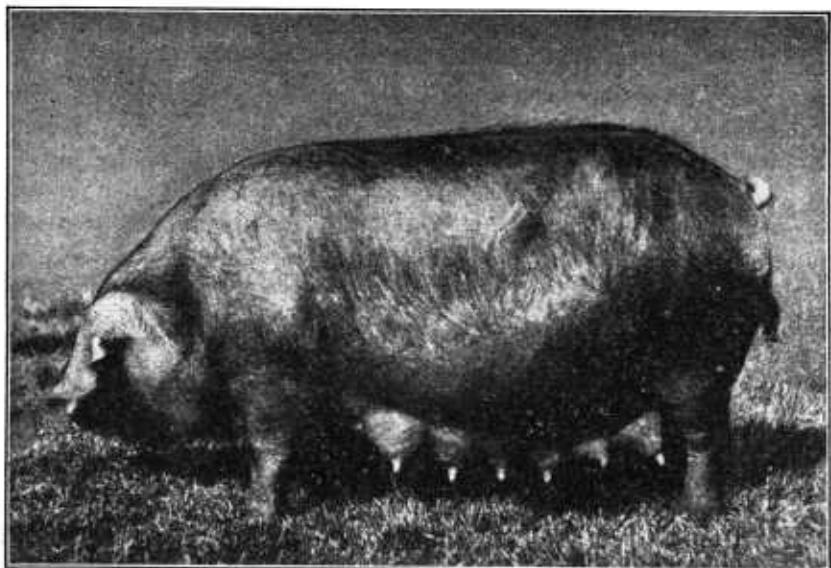


FIG. 18.—Large Black sow.

LARGE BLACK.

The ancestry of the Large Black breed of swine is not well known. These hogs have been bred for a great many years in England but are not commonly found in the United States. The animal is large and coarse, solid black in color, with large, drooping ears. It approaches the bacon type in general conformation. In England the chief claim made for its superiority is because of its bacon qualities. The Ottawa Agricultural Experiment Station, in Canada, however, found that the bacon of this breed was not equal to that of the Large Yorkshire or of the Tamworth. The Large Black is considered a desirable breed by farmers in England. The sows are prolific and make excellent mothers.

The record association is the American Large Black Pig Society, of which W. T. Benton, Lexington, Ky., is the secretary.